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Notice of Allowability	Application No.	Applicant(s)	
	10/681,390	WANG ET AL.	
	Examiner	Art Unit	
	Anatoly Vortman	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/07/03.
2. ☒ The allowed claim(s) is/are 1-14.
3. ☒ The drawings filed on 07 October 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>10/7/03</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

In the Specification:

- p. 2, section [0006], line 9 of the section, [comprises] was replaced with --comprise--;
- p. 3, section [0010], [inverted] was replaced with --heat dissipating device positioned upside-down --;
- p. 4, section [0017], lines 3 and 5 from the bottom of the page, --in-- has been inserted before "trapeziform";
- p. 5, section [0019], line 6 of the section [surrounded on the heat pipes] has been replaced with [surround the heat pipes];
- p. 5, section [0020], line 2 of the section, [snappy] has been replaced with --snappily--.

In the Abstract:

line 7 of the abstract, following "fins" [includes] has been replaced with --include--.

In the Claims:

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Claim 5, line 12 of the claim [can facilitate] has been replaced with --facilitates--.

Claim 8, line 2 of the claim, [comprises] has been replaced with --comprise--.

Claim 11, lines 5 and 12 of the claim, [spacer] has been replaced with --spacers--.

The abovementioned amendments to the claims have been made only to clarify the language and without affecting the scope of the claims.

2. The following is an examiner's statement of reasons for allowance:

The allowability resides in the overall structure of the device as recited in independent claims 1, 5, and 11, and at least in part, because claim 1 recites: "arcuate spacers" and "a heat pipe extending through the base part and the fin part and bonding the base part and the fin part together with the spacers interleaved between the inner fins", claim 5 recites: "arcuate spacers interleaved between lower portions of the fins" and "a heat pipe sequentially extending through the lower portions of the fins, the spacers and upper portions of the fins to bond the fins and the spacers together", and claim 11 recites: "a plurality of shorter spacers", "a plurality of higher inner fins", and "at least one heat pipe extending through said interleaved inner fins and spacers".

The aforementioned limitations in combination with all remaining limitations of the respective independent claims, are believed to render said independent claims 1, 5, and 11 and all claims dependent therefrom patentable over the art of record.

The closest reference to the present invention is believed to be US/2004/0066628 to Liu.

Liu disclosed (Fig. 4): "a heat sink for a heat generating component, the heat sink comprising: a base part (2) for contacting with the heat generating component, the base part

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comprising a plurality of spacers (11); a fin part (1) comprising a pair of outer fins and a plurality of inner fins (11) cooperatively defining a chamber between the outer fins; and a heat pipe (3) extending around the base part (2) and the fin part (1) and bonding the base part (2) and the fin part (1) together with the spacers (11) interleaved between the inner fins (21), but did not disclose that the spacers are arcuate and that the heat pipe extending through the base part and the fin part, as required by independent claim 1 of the instant application, or that the arcuate spacers interleaved between lower portions of the fins and the heat pipe sequentially extending through the lower portions of the fins, the spacers and upper portions of the fins to bond the fins and the spacers together, as required by independent claim 5, or a plurality of shorter spacers and a plurality of higher inner fins, wherein at least one heat pipe extending through the interleaved inner fins and spacers, as required by independent claim 11 of the instant application.

The Examiner has also cited the following pertinent to the present invention references:

DE/3635901, US/5020586, 5593012, 5912802, 6352104, 6076594, and 6034430

disclosed heat sinks with interleaving fins;

US/5699853, 6189601, 5959837, 6651734, and 6827136 disclosed heat sinks with heat pipes imbedded therein; and

US/6842342, 6883592, 5946190, 6062301, 6289975, 6404632, 6450250, 5654587, 5509465, 4291754, 4291752, and 2002/0121358 disclosed various types of heat sinks with fins.

None of the cited references either taken alone or in combination is believed to render the present invention unpatentable as claimed.

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3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anatoly Vortman whose telephone number is 571-272-2047. The examiner can normally be reached on Monday-Friday, between 10:00 am and 6:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Lynn Feild can be reached on 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AV



Anatoly Vortman
Primary Examiner
Art Unit 2835